UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 6,973,475 B2
APPLICATION NO. : 09/399065
DATED : December 6, 2005
INVENTOR(S) : Hayes

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

The Title Page, showing an illustrative figure should be **deleted** and **substitute** therefor the attached Title Page.

Delete Drawing Sheets 1-6 and **substitute** therefor the Drawing Sheets consisting of Figs 1-9 as shown on the attached pages.

Signed and Sealed this

Twenty-sixth Day of May, 2009

John Doll

JOHN DOLL
Acting Director of the United States Patent and Trademark Office

(12) **United States Patent**
Kenyon et al.

(10) **Patent No.: US 6,973,475 B2**
(45) **Date of Patent: Dec. 6, 2005**

(54) **DYNAMIC SCALABLE MULTI-MEDIA CONTENT STREAMING**

(75) Inventors: **Jeremy A. Kenyon**, Kirkland, WA (US); **Alex K. St. John**, Kirkland, WA (US)

(73) Assignee: **WildTangent**, Redmond, WA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 375 days.

(21) Appl. No.: **09/399,065**

(22) Filed: **Sep. 18, 1999**

(65) **Prior Publication Data**

US 2002/0065925 A1 May 30, 2002

(51) **Int. Cl.**[7] **G06F 15/16**
(52) **U.S. Cl.** **709/203**; 709/204; 709/217; 709/219; 709/231; 709/246
(58) **Field of Search** 709/202–204, 709/217–219, 227–228, 231–232, 246–248; 345/418–421

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,774,496	A *	9/1988	Tomasevich	341/50
5,621,660	A *	4/1997	Chaddha et al.	709/247
5,666,293	A	9/1997	Metz et al.	
5,832,229	A *	11/1998	Tomoda et al.	709/227
5,918,002	A *	6/1999	Klemets et al.	455/7
5,928,330	A *	7/1999	Goetz et al.	709/231
5,953,506	A *	9/1999	Kalra et al.	345/428
5,991,816	A *	11/1999	Percival et al.	709/247
6,006,251	A *	12/1999	Toyouchi et al.	709/203
6,014,694	A *	1/2000	Aharoni et al.	709/219
6,061,722	A *	5/2000	Lipa et al.	709/224
6,072,809	A *	6/2000	Agrawal et al.	370/503
6,104,392	A *	8/2000	Shaw et al.	345/335
6,122,658	A *	9/2000	Chaddha	709/203
6,151,632	A *	11/2000	Chaddha et al.	709/231
6,154,768	A *	11/2000	Chen et al.	709/203
6,161,137	A	12/2000	Ogdon et al.	709/229
6,185,625	B1 *	2/2001	Tso et al.	709/247
6,216,157	B1 *	4/2001	Vishwanath et al.	709/208
6,219,704	B1 *	4/2001	Kim et al.	709/224

(Continued)

FOREIGN PATENT DOCUMENTS

DE	GB 2 330 429	4/1999

(Continued)

OTHER PUBLICATIONS

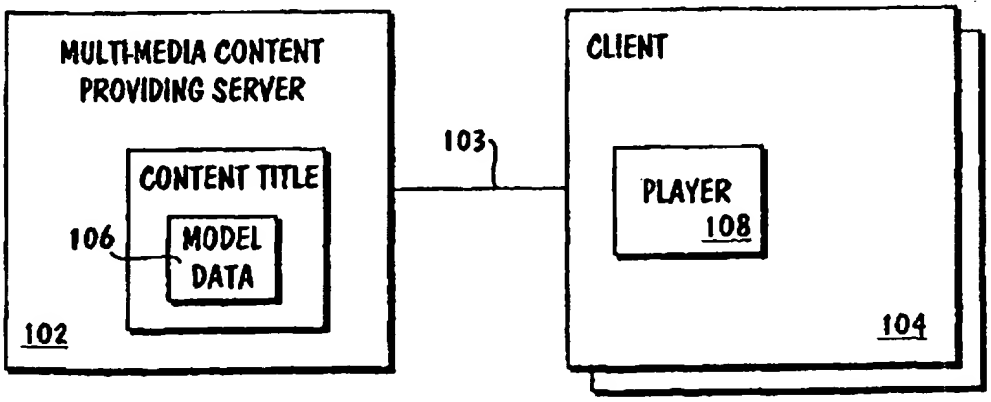
"WildTangent Announces Web Driver for Streaming Interactive 2D/3D Media", Jun. 24, 1999, pp. 1-11, XP002175099, retrieved from the Internet: URL:www-wave-report.com/1999%20Wave%20issues/wave9066.html> retrieved on Aug. 15, 2001! p. 1, paragraph 2 -p. 2, paragraph 2.

Primary Examiner—Bharat Barot
(74) *Attorney, Agent, or Firm*—Schwabe, Williamson & Wyatt, P.C.

(57) **ABSTRACT**

A novel method for streaming multi-media content is disclosed. Multiple versions of model data tailored for different operating environments differentiated in accordance with value(s) of at least one operating characteristic of remote requesting client computer systems are stored in a multi-media content providing server. A multi-media content player of a client computer system determines the operating characteristic value(s) for the at least one operating characteristic of the client computer system. The multi-media content player adaptively requests appropriate versions of selected ones of the model data, based at least in part on the determined operating characteristic value(s) of the at least one operating characteristic of the client computer system. In response, the providing server streams the requested versions of the requested model data to the multi-media content player for rendering. As a result, user experience at the client computer system is enhanced.

38 Claims, 6 Drawing Sheets



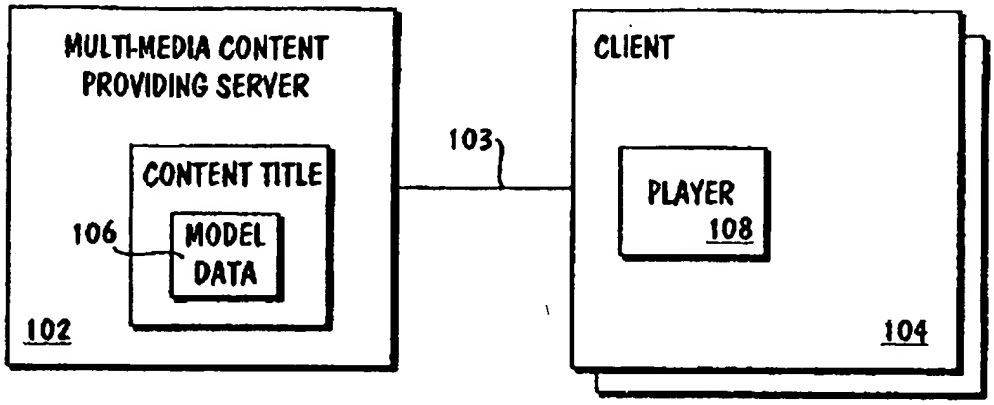


FIG. 1

WEIGHT	CPU	MEMORY	BANDWIDTH	BUS SPEED	DSP SUPPORT	GRAPHICS SUPPORT
0	100 MHz	8 MEG	14.4 K	60 MHz	NO	NO
.2	200 MHz	16 MEG	28.8 K			
.4	400 MHz	32 MEG	56 K	100 MHz		
.6	600 MHz	64 MEG	DSL			
.8	800 MHz	128 MEG	CABLE	266 MHz		
1	1000 MHz	256 MEG	T1		YES	YES

FIG. 2

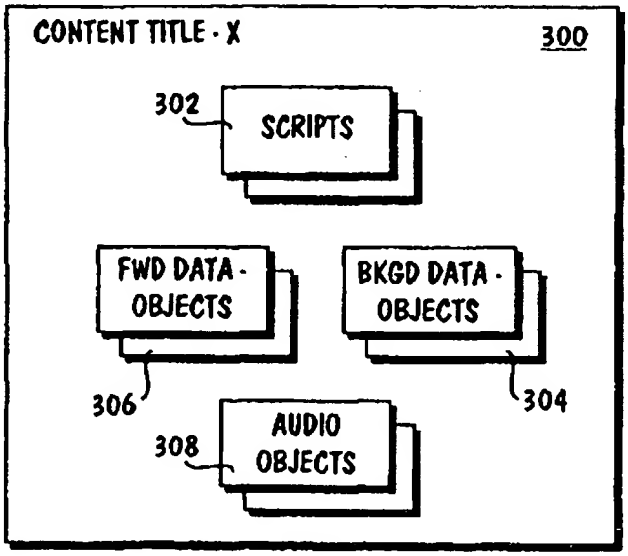

CONTENT TITLE - X
300
302
SCRIPTS
FWD DATA - OBJECTS
BKGD DATA - OBJECTS
306
304
308
AUDIO OBJECTS

FIG. 3

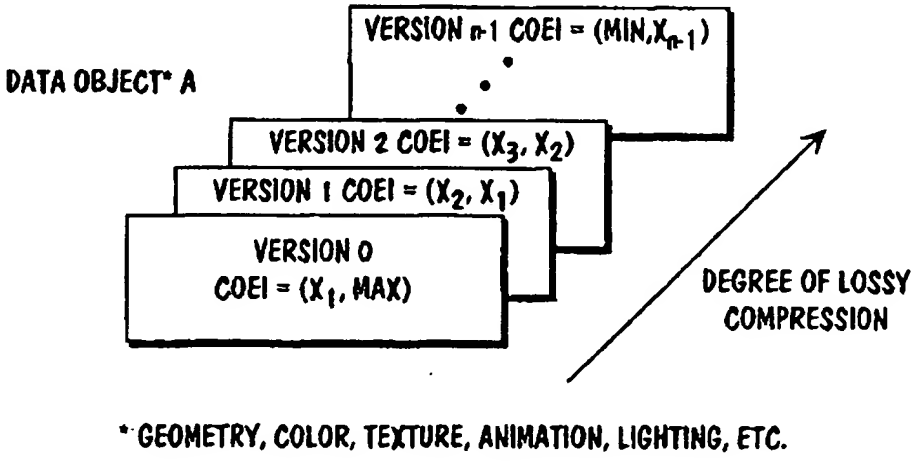

DATA OBJECT* A
VERSION n-1 COEI = (MIN, X_{n-1})
VERSION 2 COEI = (X_3, X_2)
VERSION 1 COEI = (X_2, X_1)
VERSION 0
COEI = (X_1, MAX)
DEGREE OF LOSSY COMPRESSION
* GEOMETRY, COLOR, TEXTURE, ANIMATION, LIGHTING, ETC.

FIG. 4

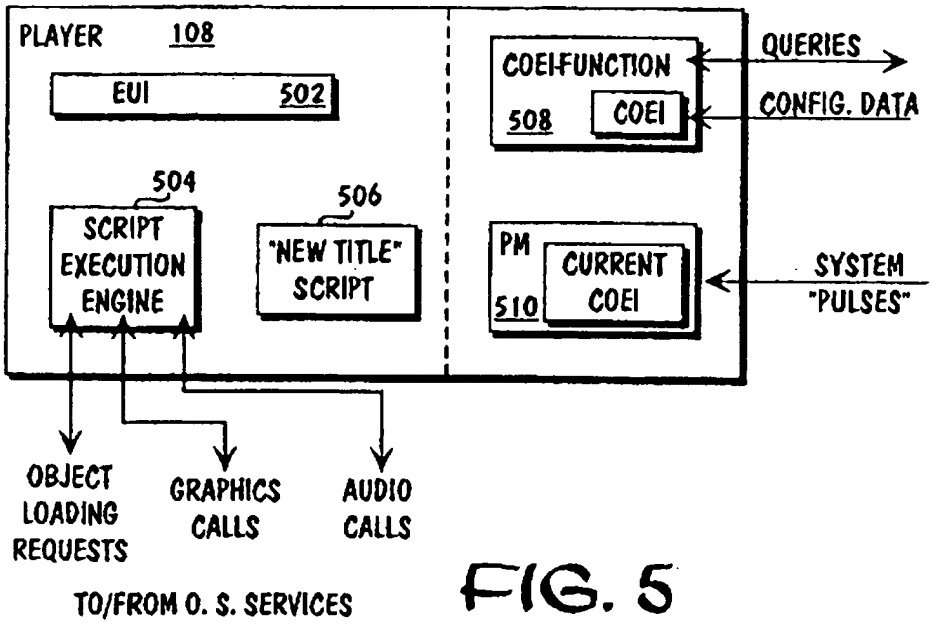

PLAYER 108
EUI 502
504
SCRIPT EXECUTION ENGINE
506
"NEW TITLE" SCRIPT
COEI-FUNCTION
508
COEI
QUERIES
CONFIG. DATA
PM
510
CURRENT COEI
SYSTEM "PULSES"
OBJECT LOADING REQUESTS
GRAPHICS CALLS
AUDIO CALLS
TO/FROM O. S. SERVICES

FIG. 5

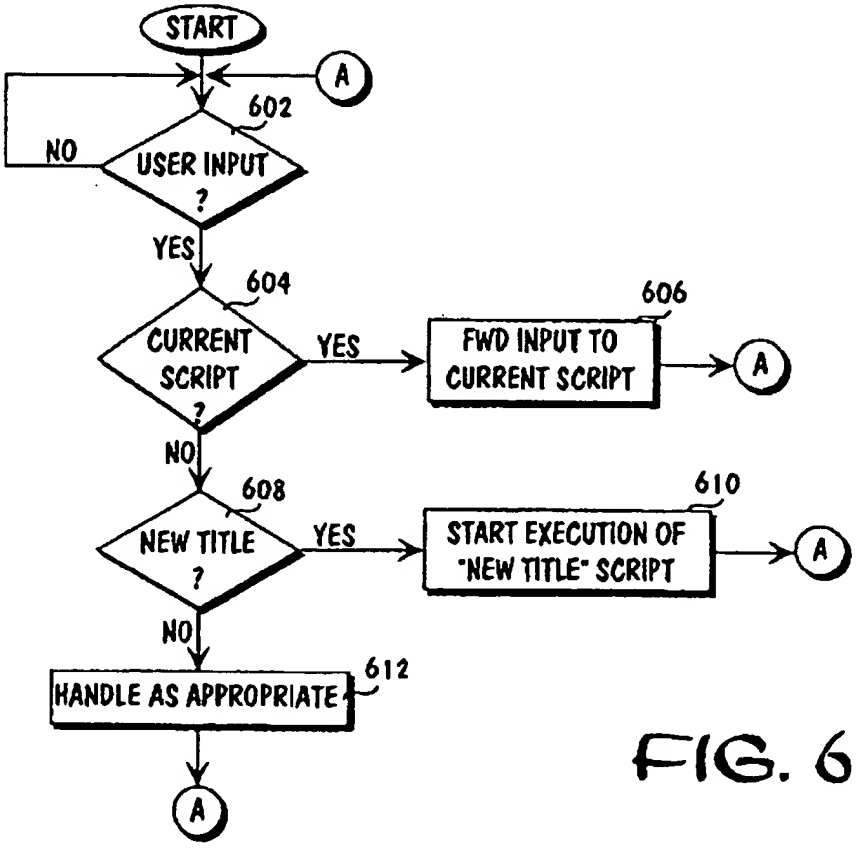

START
A
602
NO
USER INPUT ?
YES
604
CURRENT SCRIPT ?
YES
606
FWD INPUT TO CURRENT SCRIPT
A
NO
608
NEW TITLE ?
YES
610
START EXECUTION OF "NEW TITLE" SCRIPT
A
NO
HANDLE AS APPROPRIATE
612
A

FIG. 6

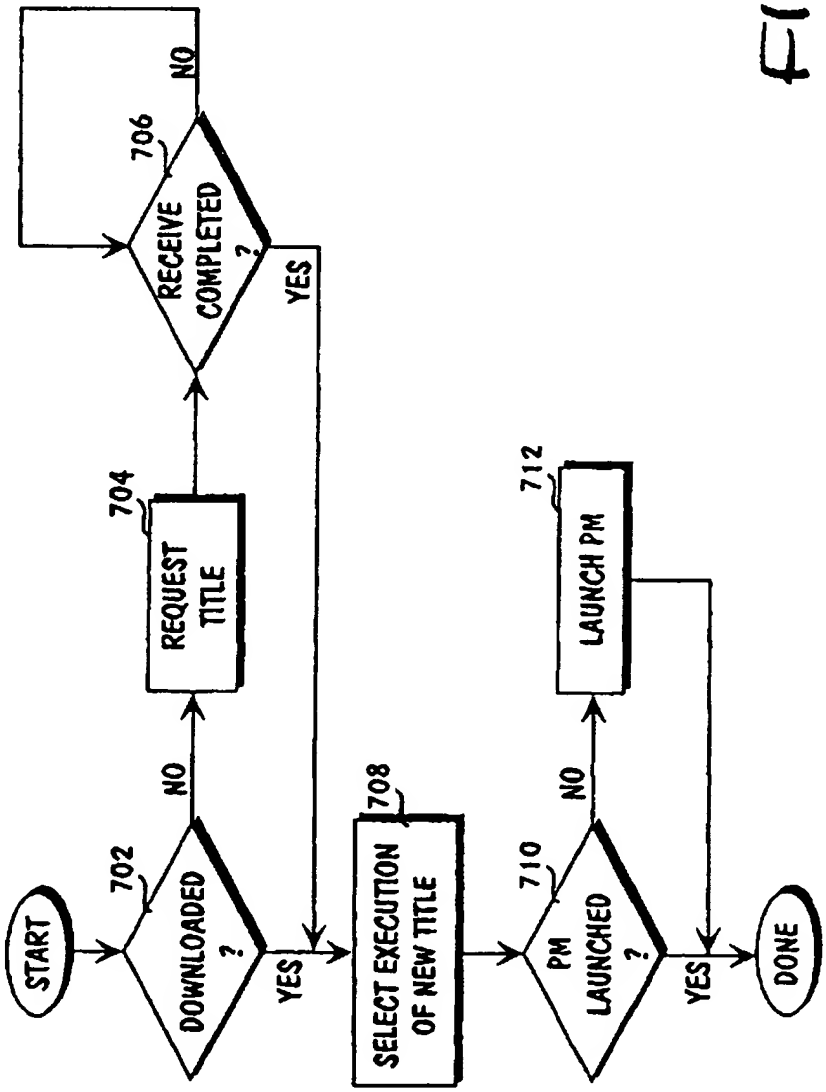

START
DOWNLOADED ?
702
NO
YES
REQUEST TITLE
704
RECEIVE COMPLETED ?
706
NO
YES
SELECT EXECUTION OF NEW TITLE
708
PM LAUNCHED ?
710
NO
YES
LAUNCH PM
712
DONE

FIG. 7

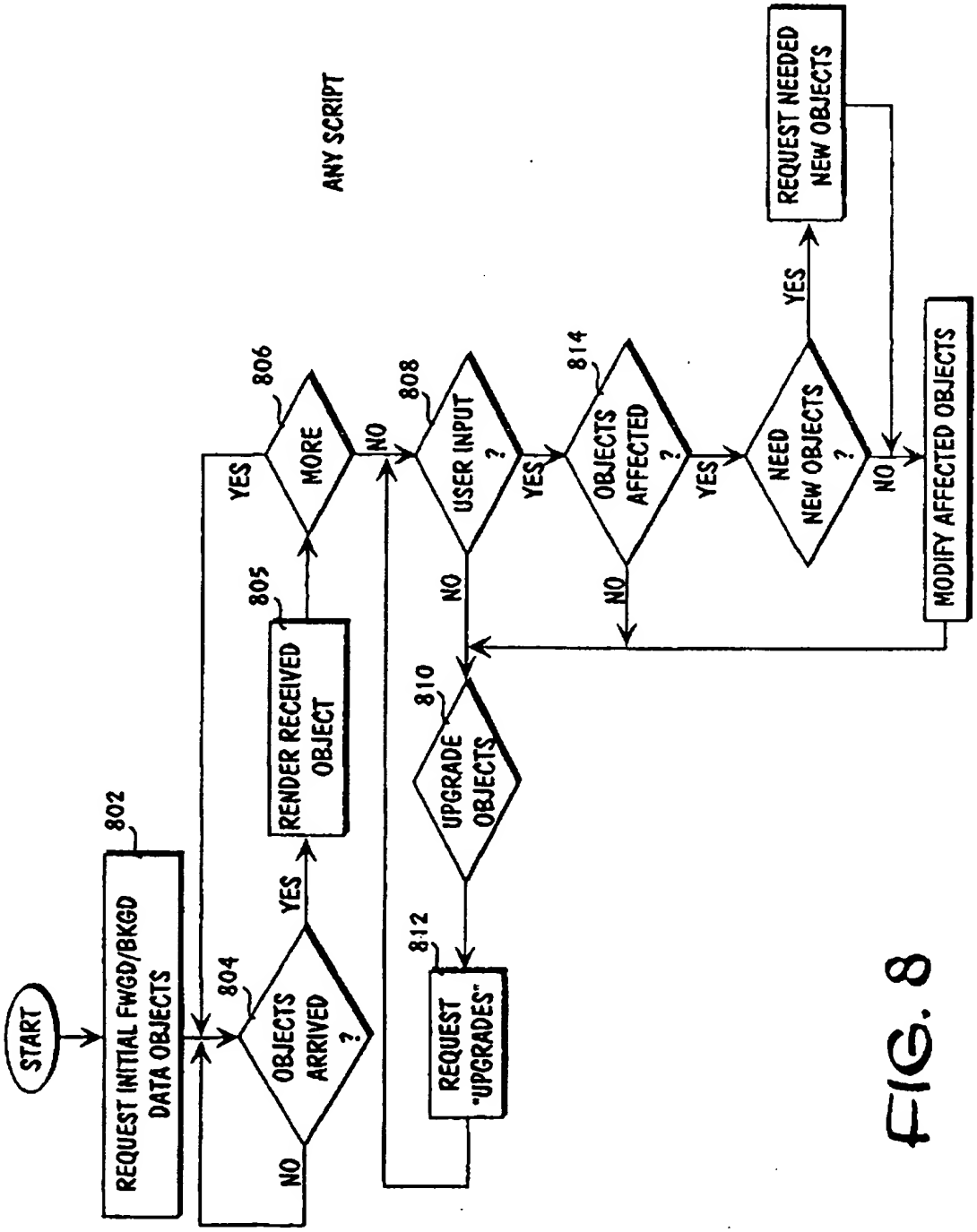

ANY SCRIPT
START
REQUEST INITIAL FWGD/BKGD DATA OBJECTS
802
OBJECTS ARRIVED ?
804
YES
NO
RENDER RECEIVED OBJECT
805
MORE
806
YES
NO
USER INPUT ?
808
YES
NO
UPGRADE OBJECTS
810
REQUEST "UPGRADES"
812
OBJECTS AFFECTED ?
814
YES
NO
NEED NEW OBJECTS ?
YES
NO
REQUEST NEEDED NEW OBJECTS
MODIFY AFFECTED OBJECTS

FIG. 8

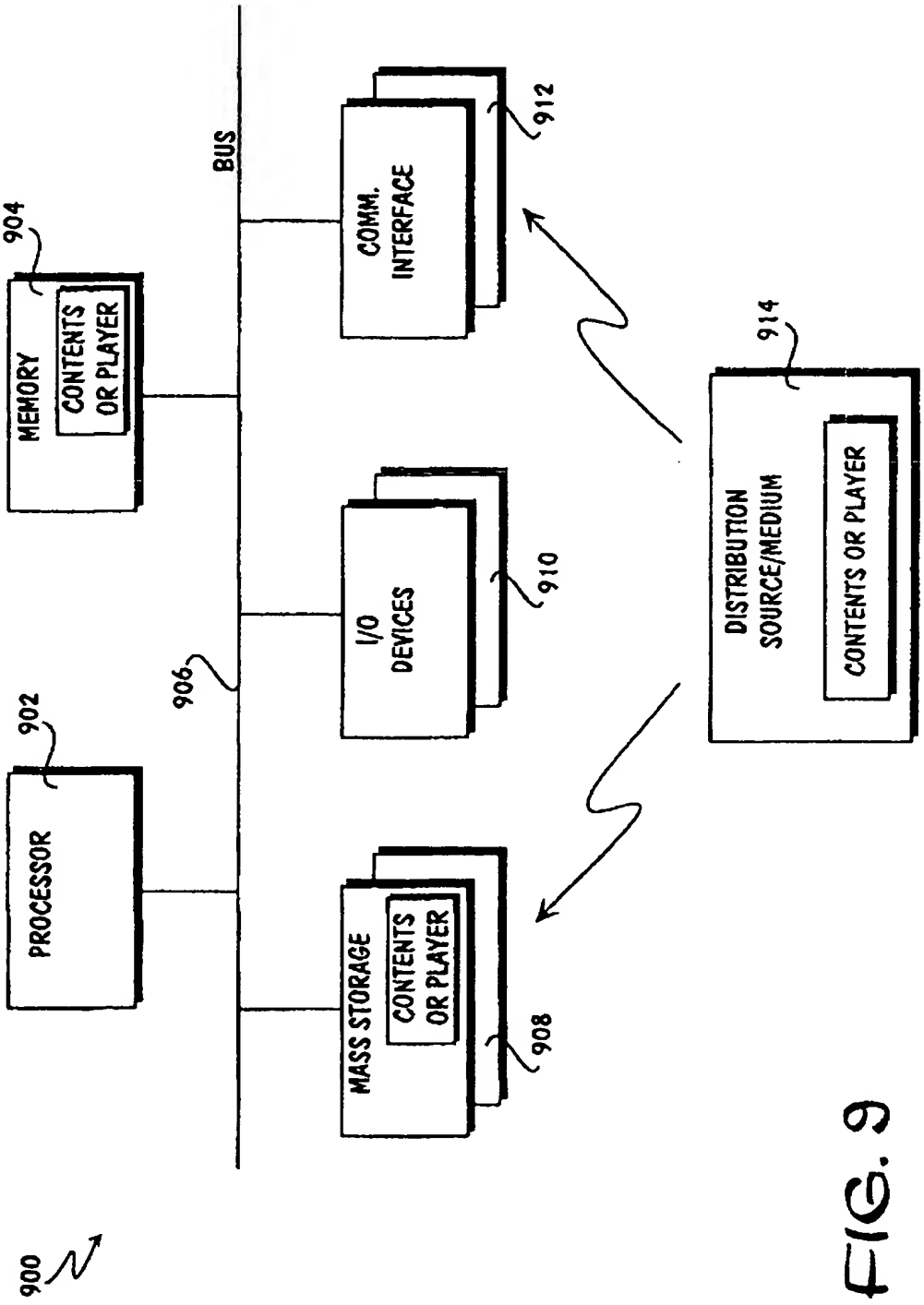

900
PROCESSOR
902
MEMORY
CONTENTS OR PLAYER
904
BUS
906
MASS STORAGE
CONTENTS OR PLAYER
908
I/O DEVICES
910
COMM. INTERFACE
912
DISTRIBUTION SOURCE/MEDIUM
CONTENTS OR PLAYER
914

FIG. 9